REMARKS/ARGUMENTS

Reconsideration of the present application is respectfully requested.

Claims 1 to 32 were pending in this application.

Claim 33 has been added to more particularly claim what the inventor believes is his invention. Support for this claim can be found in paragraph [008] of the application, as filed. No new subject matter has been added.

Claims 1 to 33 are currently pending in this application.

REJECTIONS UNDER 35 U.S.C. § 103

The Examiner has rejected claims 1-32 under 35 U.S.C. 103(a) as being unpatentable over Bronfin *et al.* (US 2003/0086811 A1) in view of Norville *et al.* (US 6,845,809 B1).

Applicant respectfully disagrees with the Examiner's objection and submits the following arguments in traverse.

Bronfin *et al.* disclose a magnesium-based alloy containing, in weight percent, at least 86% magnesium (Mg), 4.8 to 9.2% aluminum (Al), 0.08 to 0.38% manganese (Mn), 0.00 to 0.9% zinc (Zn), 0.2 to 1.2% calcium (Ca), 0.05 to 1.4% strontium (Sr), and 0.00 to 0.8% rare earth elements.

Applicant respectfully notes that although the magnesium alloys disclosed in Bronfin *et al.* may be used in semi-solid casting processes, the Examiner has acknowledged the fact that Bronfin *et al.* do not disclose or suggest any solid fraction percentage of their alloy.

Furthermore, Applicant respectfully submits that there is in Bronfin *et al.* no indication of a possible criticality of the solid fraction percentage in an alloy for improving its castability (which is the object of Bronfin's invention), and therefore no incentive for a person skilled in the art of magnesium alloys to search for further information in that direction. Applicant respectfully submits that there is in Bronfin *et al.* no motivation for the person of skill in the art to combine the teachings of Bronfin *et al.* with those of Norville *et al.*

Norville *et al.* disclose an apparatus for and a method of producing on-demand, semi-solid material for a casting process. In particular, it essentially specifies on column 19, lines 28-36 that the solid fraction percentage, which itself determines the alloy viscosity, is predetermined depending on the style of part to be produced by the method and the number of mold or die cavities. Indeed, a high viscosity can be used when the part is rather short and thick, but lower viscosity must be used when the part is long and narrow, to facilitate the flow of the alloy to all ends and portions of the die cavity prior to solidification.

Applicant respectfully submits that the solid fraction percentage should not be considered as a simple result-effective variable in this matter, and that the choice of an adequate solid fraction range, as that claimed in the present application, would not be the result of basic routine experimentation.

More specifically, it is respectfully submitted that the solid fraction percentage cannot be considered a "variable which achieves a recognized result" in the present application, and therefore does not meet the definition given in MPEP 2144.05 II.B. Indeed, it is respectfully submitted that the solid fraction percentage has an influence not only on viscosity but also on other physical characteristics of the claimed alloy. In particular, there is substantial experimentation in the present application concerning the percentage of solid fraction used in the alloy, in relation with its mechanical properties at different temperatures, in diecast or semi-solid cast (thixomolded®) conditions. Such mechanical properties include, for example, tensile strength, creep rate or elongation (see paragraphs [0022] to [0034] of the present application). The solid fraction percentage is also linked to the microstructure of a cast sample, which it influences through the solidification rate for example (see paragraphs [0036] to [0046] and corresponding Figures 1A to 4E). The viscosity is therefore clearly not the only parameter of interest that is linked to the solid fraction percentage. Therefore, it is respectfully reiterated that the optimization of the solid fraction percentage in the present invention is far from being the result of routine experimentation, and it is also respectfully submitted that Norville *et al.* would not render the claimed solid fraction of independent claims 1, 7, 17 or 23 obvious to a person of ordinary skill in the art.

In light of the above arguments, it is respectfully submitted that, should a person skilled in the art have combined the teachings by Bronfin *et al.* and those by Norville *et al.*, he or she would not have been led to the magnesium-based, semi-solid casting alloy

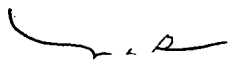
disclosed and claimed in the present application. In particular, it is respectfully submitted that claims 1-4, 7-10, 17-20 and 23-26 are novel and inventive over Bronfin *et al.* in view of Norville *et al.*

Moreover, since the alloy claimed is novel and non-obvious in view of the cited references, it is respectfully submitted that its claimed properties (claims 5-6, 11-12, 21-22 and 27-28) and microstructure (claims 15-16 and 31-32) are not inherently anticipated or rendered obvious by Bronfin *et al.* It is also respectfully submitted that no Al_4Sr intermetallic (as claimed in claims 15 and 16 of the present application) is disclosed or suggested in Bronfin *et al.* or Norville *et al.*

Furthermore, it is respectfully submitted that in view of the inventiveness of the composition of the magnesium-based alloys of the present invention, dependent claims 13, 14, 29 and 30, directed to the fact they are to be used in a thixotropic casting process, are also novel and inventive over Bronfin *et al.* and Norville *et al.*

The rejections of the original claims are believed to have been overcome by the present remarks. From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such an action is earnestly solicited.

Respectfully submitted,



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